

REMARKS

Reconsideration and allowance of the subject application are respectfully requested. By this Amendment, new claims 23-27 have been added, but no new matter is included. Thus, claims 11-16, 18, 20, 22-27 are all the claims pending in the application. Applicant respectfully submits that the pending claims define patentable subject matter.

DOUBLE PATENTING REJECTION

Claims 11, 12 and 13 are provisionally rejected on the ground of non-statutory obviousness-type double patenting as being unpatentable over claims 5, 7 and 10, respectively, of co-pending Application No. 10/263,697 (Pub. No. 2003/0068126) in view of Gao et al (Pub. No. U.S. 2003/0151820).

Independent claim 11 is herein amended. Applicant respectfully submits that claims 5, 7 and 10 of co-pending Application No. 10/263,697 in view of Gao do not render obvious the unique features of herein amended claim 11 nor its dependent claims 12 and 13. For at least the foregoing reasons, the non-statutory obviousness-type double patenting rejection of claims 11, 12 and 13 should be withdrawn.

PRIOR ART REJECTIONS

A. Claims 11-13, 18, and 20

Claims 11-13, 18 and 20 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Miyagawa (U.S. 6,380,966) in view of Gao et al. Applicant respectfully traverses the 35 U.S.C. § 103 rejection of the claims, as set forth below.

Amended claim 11 recites in part:

an array refracting element that includes at least two or more pairs of refracting members, wherein each of the at least two or more pairs of refracting members is one unit having a unit surface shape dividing one light beam into two light beams by ejecting one incident light beam toward different positions, the array refracting element being disposed between the light source and the recording medium so that a direction, in which the at least two or more pairs of refracting members are arranged in an array shape, is substantially parallel to the broad area direction of the light beam emitted from the light source,

wherein the array refracting element is configured to arrange the at least two or more pairs of refracting members in at least two pair units in an array shape in a direction orthogonal to a light beam dividing direction.

The Examiner conceded that Miyagawa fails to teach the refracting members being arranged in at least two pair units in an array shape in a direction orthogonal to the light beam dividing direction. The Examiner applied Gao in an attempt to compensate for the deficiencies of Miyagawa and indicated that Gao “discloses in Fig. 10A a refracting optical system for shaping light emitted from a laser light source, the refracting optical system (prism P) comprising two pairs of refracting members (P) arranged along the x-direction and dividing the incident light beam into four light beams shifted in the y-direction orthogonal to the arrangement direction of the prisms P (Fig. 10C) (see Paragraphs [0094]-[0095]).” (Office Action, page 6)

Applicant submits that the individual or combined teachings of Miyagawa and Gao fail teach or suggest an array refracting element that includes at least two or more pairs of refracting members, wherein each of the at least two or more pairs of refracting members is one unit having a unit surface shape dividing one light beam into two light beams by ejecting one incident light beam toward different positions...the array refracting element is configured to arrange the at

least two or more pairs of refracting members in at least two pair units in an array shape in a direction orthogonal to a light beam dividing direction, as recited in claim 11.

First, although a prism is used in Gao, the disclosure of Gao does not teach or suggest that the four prisms P split the light beams in any way. Gao teaches that the four prisms P are used to reshape or bend the light beams. Fig. 10A shows four beams where a single beam each enters a single prism P, and then one beam exits each of the four prisms P. However, an incident light beam is not divided into a plurality of beams by the prism P, as suggested by the Examiner. In fact, paragraph [0019] teaches that when the refracting system is replaced with the prism P, the prism P “shifts at least one of the first and second laser beam groups together with respect to the other only in the direction of layering.” Therefore, since no dividing of the incident light beam occurs by the four prisms P, Gao fails to teach or suggest dividing one light beam into two light beams by ejecting one incident light beam toward different positions, as recited in claim 11.

Second, Gao does not disclose a configuration such that two or more (plural) pairs of refracting members are arranged in array. Indeed, the prisms P of Fig. 10 shift the light beam in a vertical direction by arranging four prisms offset in the direction of the light axis, but do not respectively divide the light beam into two. Additionally, Gao does not teach or suggest the unique arrangement of the claim elements as recited in claim 11, wherein an array refracting element includes at least two or more pairs of refracting members, wherein each of the at least two or more pairs of refracting members is one unit having a unit surface shape dividing one light beam into two light beams by ejecting one incident light beam toward different positions.

Third, the Examiner indicated that the motivation for combining the two references is that doing so would have been to split the incident light beam into plural light beams forming a higher printing resolution. (Office Action, page 7) However, if prism P is only for reshaping or bending the light beam, one could not replace the refracting element or individual refracting members of Miyagawa with the prism P of Gao and expect the device in Miyagawa to function properly, when Gao does not teach that the four prisms P are for dividing the incident light beam. Also, since the Examiner posits that Miyagawa has a refracting element for dividing light beams, there is no motivation to modify Miyagawa by the teachings of Gao, when a higher resolution can be accomplished with the refracting element in Miyagawa. Moreover, the Examiner improperly applied co-pending Application No.: 10/263,697 to suggest that Miyagawa should be modified by Gao. As co-pending Application No.: 10/263,697 does not qualify as prior art, and therefore, should not be used as a basis for combining the references.

For at least the foregoing reasons, claim 11 is not anticipated or rendered obvious by the individual or combined teachings of Miyagawa and Gao.

B. Claims 14-16

Claims 14-16 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Miyagawa in view of Gao and Fujita (U.S. 6,108,283). Applicant respectfully traverses the 35 U.S.C. § 103 rejection as set forth below.

Amended claim 14 recites in part:

an array diffracting element that includes at least two or more pairs of refracting members, wherein at least one of the refracting members in each of the at least two or more pairs of refracting members is formed as a diffracting member and each of

the at least two or more pairs of refracting members is one unit having a unit surface shape dividing one light beam into two light beams, the array diffracting element being disposed between the light source and the recording medium so that a direction, in which the at least two or more pair of refracting members are arranged in an array shape, is substantially parallel to the broad area direction of the light beam emitted from the light source,

wherein the at least two or more refracting members are arranged in at least two pair units in an array shape in a direction orthogonal to a light beam dividing direction.

For similar although not necessarily coextensive reasons discussed above with respect to claim 11, independent claim 14 is patentable over the combined or individual teachings of Miyagawa, Gao, and Fujita. Fujita does not compensate for the deficiencies of Miyagawa and Gao.

Further regarding Fujita, Fujita fails to teach or suggest, *inter alia*, that an array refracting element with two or more refracting members in at least two pair units in an array shape in a direction orthogonal to a light beam dividing direction, as recited in claim 14. Fujita discloses that element 71 is a single pair unit only (Figs. 25A and 25B). Further, the light dividing element 71 of Fujita is to refract an incident light beam toward light receiving elements 48, 49 and 50 positioned at certain fixed locations. Therefore, Fujita cannot be configured to be plurally arranged in an array, as recited in claim 14.

For at least the foregoing reasons, independent claim 14 is not anticipated or rendered obvious by the individual or combined teachings of Miyagawa, Gao, and Fujita. Therefore, the 35 U.S.C. § 103 rejection of claims 14-16 should be withdrawn.

NEW CLAIMS

Applicant submits that new claims 23-27 recite features that are clearly patentable over the individual or combined teachings of Miyagawa, Gao, and Fujita. Therefore, Applicant submits that new claims 23-27 should be allowed over the prior art.

Further regarding new claim 27, Applicant submits that the prisms of Gao (and the elements in Miyagawa and Fujita) cannot be used as a refracting member of the claim 27 wherein when the light beams divided by the respective pairs of refracting members are condensed, the resultant condensed beam is divided into two beams forming two condensing spots, even when plural pairs of the refracting members are arranged, as recited in claim 27.


The above-identified features of the invention recited in claim 27 (See Figs. 6B and 7A, and the second paragraph of page 25 of the specification) are not even considered in Miyagawa, Gao, and Fujita, and as a result the applied references are silent with respect to these features. Consequently, it is clear that Miyagawa, Gao, and Fujita fail to teach or suggest that (1) each pair of refracting members divides the incident light beam into two, thereby forming light beams, and (2) the resultant condensed light beam is divided into two beams forming two condensing spots.

For at least the additional reasons provided above, new claim 27 is patentable and is not anticipated or rendered obvious by the individual or combined teachings of Miyagawa, Gao, and Fujita.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

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